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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,046	12/31/2003	Jong Hyun Lee	11037-188-999	1935
24341 7590 01/17/2007 MORGAN, LEWIS & BOCKIUS, LLP. 2 PALO ALTO SQUARE 3000 EL CAMINO REAL PALO ALTO, CA 94306			EXAMINER DOVE, TRACY MAE	
			ART UNIT 1745	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/17/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/751,046	LEE, JONG HYUN	
	Examiner	Art Unit	
	Tracy Dove	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 and 23-26 is/are allowed.
- 6) ☒ Claim(s) 5-22 and 27-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3 IDSs</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statements (IDSs) submitted on 12/31/03, 6/17/05 and 11/4/05 have been considered by the examiner.

Specification

The disclosure is objected to because of the following informalities: the specification uses the wrong reference numerals to refer to elements of the fuel cell system shown in at least Figure 1. For example, at [0054] the fuel gas humidifier is not 27 because 27 indicates the fuel gas supply line. Also at [0054] the oxidation gas humidifier is not 29 because 29 indicates the oxidation gas supply line. The specification should be carefully reviewed to ensure all reference numerals indicate the proper element of the fuel cell system shown in the Figures. The disclosure is objected to because of the following informalities: [0055] recites the auxiliary humidifier 65 includes an exhaust gas condensing unit 67, as well as other elements. However, Figure 1 shows auxiliary humidifier 65 and exhaust gas condensing unit 67 are separate elements. Furthermore, the specification uses two different terms for the same element. The auxiliary humidifier 65 and the water storage unit 79 are indicated by the same element in Figure 1. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 5-11, 16-22 and 27-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not appear to enable the claimed auxiliary humidifier. Specifically, it is unclear how the auxiliary humidifier operates and how fuel supply gas and oxidant supply gas that are already humidified are subjected to further humidification in an auxiliary humidifier. The specification states water injectors may inject water in the supply gas lines, but are used during start-up because the exhaust gases are not adequately humidified. Therefore, it is unclear how the auxiliary humidifier humidifies the supply gas lines with water collected from the exhaust gas lines.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-11, 16-22 and 27-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how the auxiliary humidifier functions in relation to the claimed fuel cell system of claim 1, 12 or 23. Specifically, the fuel supply gas and oxidant supply gas already require humidification in claim 1, 12 or 23.

To the extent the claims are understood in view of the 35 U.S.C. 112 rejections above, note the following prior art rejections.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over, Breault, US 6,416,892 B1.

Breault teaches a enthalpy exchange device for a fuel cell power plant. As shown in at least Figure 1, the fuel cell power plant 10 includes a fuel cell stack 14, a fuel gas supply unit 24/37, an oxidant gas supply unit 30 and a fuel cell cooling unit 34/50. The fuel cell plant further includes a fuel gas humidifier 36 that receives fuel gas 39 that is supplied to fuel cell via line 38 and exhaust fuel gas 44. The anode exhaust gas is supplied to component 36 for generating steam and/or providing water, as is well known (7:59-64). An oxidation gas humidifier 68 is provided that humidifies oxidant gas 28 supplied to the fuel cell by using cathode exhaust gas 64 from the fuel cell. The component 68 includes a membrane 12 wherein the cathode supply gas 28 flows on one side of the membrane 12 and the cathode exhaust gas flows on the other side of the membrane 12. Component 68 may be functionally integrated with the coolant loop 48 so that the housing 74 also includes a coolant accumulator chamber 84 that may be at least partially filled with a mass transfer material to serve as a degasifier 86 for stripping contaminants from the coolant stream passing in mass transfer relationship with the degasifier 86, wherein the coolant stream within the accumulator chamber 84 is in fluid communication with the degasifier 86. The heat and mass transfer device results in a oxidant

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supply that is both heated and humidified entering the fuel cell (5:8-10). The coolant unit includes a radiator 55, circulating passage 58/50/54 and pump 52. A coolant bypass passage 90 is taught by Breault and the degasifier filters the coolant by removing contaminants. The coolant may be an antifreeze solution (14:49-51).

Breault does not explicitly teach the coolant 90 passing through component 68 passing between a pair of separating plates. However, the invention would have been obvious to one of ordinary skill because Breault teaches the water from the coolant stream enters accumulator 84 before being recycled back to the coolant loop 50. This indicates that the accumulator/degasifier 86 are separated from the exhaust chamber because coolant does not enter the exhaust chamber or pass through the mass transfer membrane 12. One of skill in the art would have reasonably concluded that chamber 86 and 84 are separated from chamber 78.

Breault does not explicitly recite the fuel cell power plant has a control unit. However, the invention as a whole would have been obvious because one of skill would have known that the fuel source, oxidant source and coolant unit would necessarily be controlled in order to start and shutdown the fuel cell power plant.

Allowable Subject Matter

Claims 1-4 and 23-26 are allowed. Claims 5-11 and 27-33 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 1st and 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or suggest the claimed invention. Breault does not provide any motivation to humidify and heat the anode supply gas using the anode exhaust gas.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 10, 2007


TRACY DOVE
PRIMARY EXAMINER